

WHAT IS CLAIMED IS:

1. An image forming apparatus that includes
5 an application for performing processes on image
formation and an control service for performing system
side processes according to a function call from the
application, the image forming apparatus comprising:
a wrapping part for converting a function
10 called by the application, and performing a function
call to the control service by using the converted
function.

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2. The image forming apparatus as claimed in
claim 1, wherein the wrapping part converts the
function if there is a version difference between the
20 function used by the application for the control
service and a corresponding function in the control
service.

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3. The image forming apparatus as claimed in
claim 2, wherein the wrapping part determines whether
there is the version difference by referring to
5 information indicating that a version of the
corresponding function in the control service has been
changed.

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4. The image forming apparatus as claimed in
claim 1, wherein the wrapping part converts the
function by adding at least a dummy function or at
15 least an argument if the number of functions or the
number of arguments is different between the function
used in the application for the control service and the
corresponding function in the control service.

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5. An image forming apparatus that includes
an application for performing processes on image
25 formation and an control service for performing system

side processes according to a function call from the application, the image forming apparatus comprising:

a wrapping part for selecting messages to be sent to the application from among messages sent from
5 the control service.

10 6. The image forming apparatus as claimed in claim 5, wherein the wrapping part selects the messages by referring to information indicating predetermined messages that should not be sent to the application.

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7. The image forming apparatus as claimed in claim 1, the image forming apparatus further comprising
20 a virtual application service that operates as a client process for the control service and operates as a server process for the application,

wherein the wrapping part is included in the virtual application service.

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8. The image forming apparatus as claimed in
5 claim 7, the image forming apparatus comprising:

a version check part for determining whether
a version of a set of functions used by the application
for the virtual application service is within a
predetermined range that the virtual application
10 service can support.

15 9. The image forming apparatus as claimed in
claim 8, wherein the version check part obtains the
version of the set of the functions from the
application, and determines whether the version is
within the predetermined range by referring to
20 information including the predetermined range.

25 10. The image forming apparatus as claimed in

claim 7, the image forming apparatus comprising:

a version check part for determining,
function by function, whether a version of a function
used by the application for the virtual application
5 service is within a predetermined range that the
virtual application service can support.

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11. The image forming apparatus as claimed in
claim 10, wherein the version check part obtains the
version of the function from the application, and
determines whether the version is within the
15 predetermined range by referring to information
including the predetermined range.

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12. A method performed by an image forming
apparatus that includes an application for performing
processes on image formation and an control service for
performing system side processes according to a
25 function call from the application, the method

comprising:

a wrapping step of converting a function
called by the application, and performing a function
call to the control service by using the converted
5 function.

10 13. The method as claimed in claim 12,
wherein the image forming apparatus converts the
function if there is a version difference between the
function used by the application for the control
service and a corresponding function in the control
15 service.

20 14. The method as claimed in claim 13,
wherein the image forming apparatus determines whether
there is the version difference by referring to
information indicating that a version of the
corresponding function in the control service has been
25 changed.

5 15. The method as claimed in claim 12,
wherein the image forming apparatus converts the
function by adding at least a dummy function or at
least an argument if the number of functions or the
number of arguments is different between the function
10 used in the application for the control service and the
corresponding function in the control service.

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16. A method performed by an image forming
apparatus that includes an application for performing
processes on image formation and an control service for
performing system side processes according to a
20 function call from the application, the method
comprising:

a wrapping step of selecting messages to be
sent to the application from among messages sent from
the control service.

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17. The method as claimed in claim 16,
5 wherein the image forming apparatus selects the
messages by referring to information indicating
predetermined messages that should not be sent to the
application.

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18. The method as claimed in claim 12, the
image forming apparatus further comprising a virtual
15 application service that operates as a client process
for the control service and operates as a server
process for the application,

wherein the wrapping step is performed by the
virtual application service.

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19. The method as claimed in claim 18, the
25 method further comprising:

a version check step of determining whether a version of a set of functions used by the application for the virtual application service is within a predetermined range that the virtual application
5 service can support.

10 20. The method as claimed in claim 19, wherein the virtual application service obtains the version of the set of the functions from the application, and determines whether the version is within the predetermined range by referring to
15 information including the predetermined range.

20 21. The method as claimed in claim 18, the method further comprising:

a version check step for determining, function by function, whether a version of a function used by the application for the virtual application
25 service is within a predetermined range that the

virtual application service can support.

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22. The method as claimed in claim 21,
wherein the virtual application service obtains the
version of the function from the application, and
determines whether the version is within the
10 predetermined range by referring to information
including the predetermined range.

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23. A computer program for causing an image
forming apparatus to execute wrapping processes,
wherein the image forming apparatus includes an
application for performing processes on image formation
20 and an control service for performing system side
processes according to a function call from the
application, the computer program comprising:

wrapping program code means for converting a
function called by the application, and performing a
25 function call to the control service by using the

converted function.

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24. The computer program as claimed in claim
23, wherein the wrapping program code means converts
the function if there is a version difference between
the function used by the application for the control
10 service and a corresponding function in the control
service.

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25. The computer program as claimed in claim
24, wherein the wrapping program code means determines
whether there is the version difference by referring to
information indicating that a version of the
20 corresponding function in the control service has been
changed.

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26. The computer program as claimed in claim
23, wherein the wrapping program code means converts
the function by adding at least a dummy function or at
least an argument if the number of functions or the
5 number of arguments is different between the function
used in the application for the control service and the
corresponding function in the control service.

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27. A computer program for causing an image
forming apparatus to execute wrapping processes,
wherein the image forming apparatus includes an
15 application for performing processes on image formation
and an control service for performing system side
processes according to a function call from the
application, the computer program comprising:

wrapping program code means for selecting
20 messages to be sent to the application from among
messages sent from the control service.

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28. The computer program as claimed in claim
27, wherein the wrapping program code means selects the
messages by referring to information indicating
predetermined messages that should not be sent to the
5 application.

10 29. The computer program as claimed in claim
23, wherein the computer program is included in a
virtual application service that operates as a client
process for the control service and operates as a
server process for the application.

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30. The computer program as claimed in claim
20 29, the computer program further comprising:
version check program code means for
determining whether a version of a set of functions
used by the application for the virtual application
service is within a predetermined range that the
25 virtual application service can support.

5 31. The computer program as claimed in claim
30, wherein the version check program code means
obtains the version of the set of the functions from
the application, and determines whether the version is
within the predetermined range by referring to
10 information including the predetermined range..

15 32. The computer program as claimed in claim
29, the computer program further comprising:
 version check program code means for
determining, function by function, whether a version of
a function used by the application for the virtual
20 application service is within a predetermined range
that the virtual application service can support.

33. The computer program as claimed in claim
32, wherein the version check program code means
obtains the version of the function from the
application, and determines whether the version is
5 within the predetermined range by referring to
information including the predetermined range.

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34. A computer readable medium storing
program code for causing an image forming apparatus to
execute wrapping processes, wherein the image forming
apparatus includes an application for performing
15 processes on image formation and an control service for
performing system side processes according to a
function call from the application, the computer
readable medium comprising:

wrapping program code means for converting a
20 function called by the application, and performing a
function call to the control service by using the
converted function.

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